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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,128	01/28/2004	Naohisa Kasako	WILL.0001	2251

7590 09/15/2005

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EXAMINER

PATEL, HETUL B

ART UNIT	PAPER NUMBER
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2186

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/765,128

Applicant(s)

KASAKO, NAOHISA

Examiner

Hetul Patel

Art Unit

2186

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>01/25/2005, 01/26/2005, 01/28/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. This Office Action is in response to the communication filed on January 26, 2005. Claims 11-19 are cancelled and claims 1-10 are pending in the application.
2. The IDS filed on 01/25/2005, 01/26/2005 and 01/28/2005 have been received and carefully considered.

Claim Objections

3. Claim 2 is objected to because of the following informalities:

It should be stated as "said second storage system comprises:" instead of "said first storage system comprises:" on line 11 of claim 2.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Micka et al. (USPN: 6,148,383) hereinafter, Micka.

As per claim 1, Micka teaches a data processing system (the data storage system 100 in Fig. 1) comprising a first storage system (i.e. the combination of 110-113

in Fig. 1) communicably connected to a host unit (the host 102 in Fig. 1); and a second storage system (i.e. the combination of 116-119 in Fig. 1) and a third storage system (shown in Fig. 1) each communicably connected to said first storage system, wherein:

(1) said first storage system comprises a first data storage area (the storage 112 in Fig. 1) for storing data transmitted from the host unit; a first journal storage area (the journal 111 in Fig. 1) for storing a journal used for producing a copy of data stored in said first storage area; and a first control unit (the controller 110 in Fig. 1) which writes the data transmitted from said host unit into said first data storage area, writes the journal of the data written into said first data storage area into said first journal storage area, and transmits said journal present in said first journal storage area to each of said second and third storage systems in response to a request from each of said second and third storage systems (i.e. each primary controller transmits the updates and corresponding sequence codes to its secondary controllers, i.e. the second and third controllers; e.g. see the abstract);

(2) said second storage system comprises a second data storage area (the storage 118 in Fig. 1) for storing a copy of the data present in said first data storage area; a second journal storage area (the journal 117 in Fig. 1) for storing said journal; and a second control unit (the controller 116 in Fig. 1) which reads said journal from said first storage system at an independently scheduled journal read timing, writes the read-out journal into said second journal storage area, produces a copy of the data present in said first data storage area based on said journal present in said second journal storage area at an independently scheduled restore timing, and writes the copy into said second data storage area (e.g. see Col. 2, lines 52-65); and

(3) said third

storage system (shown in Fig. 1) comprises a third data storage area (shown in Fig. 1) for storing a copy of the data present in said first data storage area; a third journal storage area (shown in Fig. 1) for storing said journal; and a third control unit (shown in Fig. 1) which reads said journal from said first storage system at an independently scheduled journal read timing, writes the read-out journal into said third journal storage area, produces a copy of the data present in said first data storage area based on said journal present in said third journal storage area at an independently scheduled restore timing, and writes the copy into said third data storage area (e.g. see Col. 2, lines 52-65), and said first control unit of said first storage system detects as to whether or not said journal present in said first journal storage area has been read by said second and third storage systems, holds said journal present in said first journal storage area till the journal is read by both said second and third storage systems, and then deletes said journal present in said first journal storage area after the journal has been read by both said second and third storage systems (e.g. see Col. 9, lines 34-40 and steps 412, 414 and 416 in Fig. 4).

As per claim 9, Micka teaches the claimed invention as described above and furthermore, Micka teaches that the first data storage area in said first storage system has a plurality of logical volumes (e.g. see Col. 7, lines 29-33); said first control unit writes into said first journal storage area a plurality of journals each corresponding to a plurality of data stored in said plurality of logical volumes; information relating to an update sequence of said plurality of data, each corresponding to said plurality of journals, is contained in said plurality of journals stored in said first journal storage area;

and each of the second and third control units of said second and third storage systems produces copies of said plurality of data based on said plurality of journals according to said update sequence contained in said plurality of journals read out from said first storage system and writes those copies in respective said second and third data storage areas (e.g. see the abstract and Figs. 1 and 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Micka in view of Hirakawa et al. (USPN: 2004/0267829) hereinafter, Hirakawa.

As per claim 2, Micka teaches the claimed invention as described above and furthermore, Micka teaches each of first, second and third storage systems comprises a plurality of physical storage units (e.g. see Col. 7, lines 29-33). However, Micka does not clearly teach that each of said first, second and third control unit comprises a host adapter, a disk adapter and a cache memory. Hirakawa, on the other hand, teaches that each storage system (100A in Fig. 11) comprises a host adapter (110 in Fig. 11) for exchanging data with said host device (180 in Fig. 11), a disk adapter (120 in Fig. 11) for exchanging data with said plurality of physical storage units (230 in Fig. 11), and a cache memory (130 in Fig. 11) for storing the data received by said host adapter and

the data received by said disk adapter; and said first control unit allocates the storage areas held by said plurality of physical storage units in said first storage system to said first data storage area (i.e. the original logical volume) and said first journal storage area (i.e. the journal logical volume) (e.g. see claims 15-16 and Fig. 11). Accordingly, it would have been obvious to one of ordinary skill in the art at the time of the current invention was made to implement a host adapter, a disk adapter and a cache memory as taught by Hirakawa into each of said first, second and third control units taught by Micka. In doing so, the data can be exchanged/transferred between different storage systems easily and faster. Therefore, it is being advantageous.

6. Claims 3-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Micka.

As per claims 3-8 and 10, Micka teaches the claimed invention as described above. It would have been obvious to one of ordinary skill in the art at the time of the current invention was made to control the time interval of the journal read according to (i) the number of data in the journal that has been read from the first journal storage area; (ii) the communication quantity of data exchanged between said first storage system and said third storage system; (iii) the storage capacity of said journal held in said third data storage area; and (iv) the processing load of said third storage system, in order to avoid the possible data corruption and/or loss due to reading data over the limit/capacity.

Conclusion


7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hetul Patel whose telephone number is 571-272-4184. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Kim can be reached on 571-272-4182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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MATTHEW D. ANDERSON
PRIMARY EXAMINER